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ABSTRACT

Microteaching has been widely used in the training of high school teachers for the past several years. In some cases, trainees have taught actual secondary students in the microteaching situation. In other cases, the trainees have played the role of students in a peer-teaching mode of microteaching. This study compared the real and peer-teaching modes of microteaching in relation to subsequent teaching success. It was hypothesized that teacher trainees who taught actual secondary school students in microteaching would be rated higher on "teacher-pupil rapport" and "pupil participation and attention" than the peer-teaching group. Ratings were made on the Stanford Teacher Competence Appraisal Guide by 2,306 secondary school students in northwest Missouri and southwest Iowa schools. No significant differences between mean ratings of the two groups were obtained on any of the 13 items listed on the Appraisal Guide. It was concluded that peer teaching is a viable alternative microteaching procedure for teacher-trainees with the same cultural background. Three appendixes, containing the Stanford Teacher Competence Appraisal Guide, a skills rating sheet, and a syllabus for secondary methods course, are included. (Author)

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EFFECTS OF TWO STYLES OF MICROTEACHING ON STUDENT TEACHING PERFORMANCE

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Author's Abstract

Microteaching has been widely used in the training of high school teachers for the past several years. In some cases trainees have taught actual secondary students in the microteaching situation, and in other cases a "peer-teaching" mode has been used in which other trainees play the roles of students. The purpose of this study was to determine whether or not the "real" mode of microteaching has any advantage over the "peer-teaching" mode in terms of subsequent teaching success.

It was hypothesized that teacher trainees who taught actual secondary school students in microteaching would be rated higher on "teacher-pupil rapport" and "pupil participation and attention" than the peer-teaching group. Ratings were made on the "Stanford Teacher Competence Appraisal Guide" by 2,306 secondary school students in northwest Missouri and southwest Iowa schools.

No significant differences between mean ratings of the two groups were obtained on any of the thirteen items listed on the "Appraisal Guide." It was concluded that peer teaching is indeed a viable alternative microteaching procedure. This generalization should be limited, however, to situations similar to the one described in which secondary school students originate from a cultural background similar to that of the teacher-trainees.

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William L. Hinckley

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Maryville, Missouri

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INTRODUCTION

The Problem

Since its inception in 1963 microteaching has become a well known and widely used technique in teacher education.[1] Considerable research has been done to test the effectiveness of videotaped feedback, "modeling" of teaching skills, and various patterns and types of reinforcement.[2] Microteaching has been supported as an effective means of training teachers to use specified teaching skills,[3] and it has been well received and highly rated by teacher trainees.[4]

A national survey of microteaching practices in college and university departments of secondary education in 1969 indicated that many colleges were adopting microteaching procedures similar to the Stanford program in which "real" secondary students are used. In other colleges a "peer-teaching" paradigm has been adopted, often because of the expenses and scheduling difficulties involved in obtaining the service of secondary school students.[5] No research has been reported to date which compares the effectiveness of the "real" and "peer" modes.

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[1] See D. W. Allen and K. A. Ryan, Microteaching (Reading, Massachusetts: Addition-Wesley, 1969) and J. M. Cooper, "Microteaching: An Annotated Bibliography," ERIC Clearinghouse on Teacher Education, Washington, D.C., February 1970.

[2] See H. E. Aubertine, An Experiment in the Set Induction Process and Its Application to Teaching, unpublished Ed.D dissertation, Stanford University, 1964. K. A. Acheson, The Effects of Feedback from Television Recordings and Three Types of Supervisory Treatment on Selected Teacher Behaviors, unpublished Ed.D. Dissertation, Stanford University, 1964. F. J. McDonald, D. W. Allen, and M. E. J. Orme, "Effects of Self-Feedback and Reinforcement on the Acquisition of a Teaching Skill," (mimeographed, Stanford University, 1966). D. W. Allen, F. J. McDonald and M. E. J. Orme, "The Effects of Feedback and Practice Conditions on the Acquisition of a Teaching Skill," (mimeographed, Stanford University, 1966). M. E. J. Orme, F. J. McDonald, and D. W. Allen, "The Effects of Modeling and Feedback Variables in the Acquisition of a Complex Teaching Strategy," (mimeographed, Stanford University, 1966).

[3] Ibid.

[4] W. L. Hinckley, "Student Teaching for Experienced Teachers," School and Community, LVI, no. 9, May 1970, p. 27.

[5] See B. E. Ward, "A Survey of Microteaching in NCATE - Accredited Colleges and Universities," (mimeographed, University of South Dakota, 1969).

The purpose of this study was to determine whether or not the "real" mode of microteaching has any advantage over "peer-teaching" in terms of enabling secondary teacher trainees to have better success with their students in a subsequent student teaching experience.

Hypotheses

It was hypothesized that student teachers who had taught actual secondary students would be rated higher on "teacher-pupil rapport" and "pupil participation and attention" than student teachers who had taught their collegiate peers in the microteaching experience. "Stanford Teacher Competence Appraisal Guide" ratings by secondary students during trainees' student teaching were used as criterion measures. Eleven other items on the "Appraisal Guide" were also used to assess differences, but directional hypotheses were not specified for these categories. A copy of the "Stanford Teacher Competence Appraisal Guide" is included in Appendix A.

Relevance of Findings

If the hypotheses were confirmed, then it would appear that the money and effort currently being spent on obtaining the services of actual secondary school students is justified. If the hypotheses were not supported, then it would seem that the more economical "peer-teaching" alternative is reasonable in terms of the training effects produced.

Rationale Supporting the Hypotheses

The typical teacher-trainee in secondary education has spent about four years in a college environment and has had little or no contact during that time with secondary school students. Suddenly, in student teaching, he finds himself confronted with an assemblage of adolescents who may be very different from his college peer group in cultural background, attitudes, motivation, sophistication, and aptitudes. The outcome of this confrontation often depends upon the trainee's ability to adjust quickly and develop a sensitivity to the attributes of a secondary school student group.

The "peer-teaching" model of microteaching provides a context for practice of specified teaching skills. It also enables the trainee to benefit from videotaped feedback and supervisory comments. The nature of student responses to the trainee's teaching, however, may be quite different from the kinds of responses he would experience in a geniune secondary school teaching situation. If actual secondary school students are used in the laboratory, it seems reasonable that their responses should more closely approximate those to be encountered in a real classroom.

Habituation to these "realistic" response patterns should enable the teacher-trainee to develop a set of expectations and teaching strategies appropriate to the actual classroom. He is, in short, learning to communicate with the secondary school student group. It was anticipated that he would apply this learning during his student teaching, and that he would therefore have less difficulty in obtaining student participation and attention and enjoy better rapport with his students than a student teacher who had practiced only on his peers.

"Stanford Teacher Competence Appraisal Guide" ratings by secondary school students of the student teacher's level of competence in achieving "pupil participation and attention" and "teacher-pupil rapport"[6] were used as evaluative criteria for three reasons. First, it seemed logical that these items would reflect effectiveness of communication. Second, some confidence in the "Appraisal Guide" as a reliable instrument appeared justified. The 1967 version of the "Guide" was developed and refined during eight years of research involving factor analysis and tests of reliability.[7] Third, research with the "Guide" indicated that ratings of teachers by secondary school students "produce a strong composite criterion measure."[8]

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[6]Secondary Teacher Education Program, Stanford University, "Stanford Teacher Competence Appraisal Guide," (mimeographed, Stanford University, 1967).

[7]Ibid.

[8]Ibid.

PROCEDURES

The experiment was carried out in conjunction with a course in secondary school teaching methods which was taught on an eight-week block plan. Students enrolled in the course were divided randomly into two groups which received treatment as shown in Table I. (Differences are underlined.)

TABLE I - Control and Experimental Group Treatments

Control Group	Experimental Group
1. View demonstration of teaching skill and discuss the skill in class with instructor.	1. View demonstration of teaching skill and discuss the skill in class with instructor.
2. (Three-to-eight days later.) Practice the skill in a five-to-seven minute videotaped lesson in the microteaching laboratory. The "students" are three other secondary teacher trainees.	2. (Three-to-eight days later.) Practice the skill in a five-to-seven minute videotaped lesson in the microteaching laboratory. The "students" are three secondary school students from the local high school.
3. View videotape replay of the lesson and receive comments from the instructor.	3. View videotape replay of the lesson and receive comments from the instructor.
4. Receive oral and written comments from their peers.	4. Receive oral and written comments from secondary school students.

Four trainees were scheduled into each one-hour microteaching laboratory period. The skills practiced in the laboratory were set induction, questioning, use of examples, stimulus variation, disciplinary techniques, and "indirect teaching." One skill was practiced each week during a six-week period within the eight-week course structure.

Other procedural details are summarized below:

Group size and composition. The experimental and the control groups each consisted of fifty secondary teacher trainees, selected at random from a population of college students having the following characteristics:

1. Senior standing at Northwest Missouri State University.
2. Enrolled in Education 485 (Secondary Methods) on an eight-week block plan.
3. Scheduled to do student teaching during the following eight-week block.
4. Not involved in any teacher-aide or teacher-assistant program.

Skills practiced. Six skills, in the following order, were practiced: set induction, questioning techniques, use of illustrations and examples, stimulus variation, disciplinary techniques, and "indirect" teaching. All of these skills are standard practice in microteaching except the last, which consists of achieving a high indirect/direct ratio when rated by Flanders' interaction analysis system. Each week in class the skill for the following week was demonstrated and discussed. Rating sheets used with the skills are included in Appendix B.

Secondary school students. Secondary school students were provided by the Maryville R-II High School. They were selected at random from a group of volunteers. Arrangements were made with the Maryville R-II School District for four students to work each afternoon during the week. Their orientation consisted of a general briefing on microteaching procedures by Dr. Hinckley and weekly meetings in which the teaching skills were explained to them.

Content of the secondary methods course. A syllabus of Education 485 (Secondary Methods) is included in Appendix C. The class meets in sections three times weekly for an eight-week block. Microteaching begins during the second week and continues through the seventh.

Instructions to "Microstudents". Secondary students who worked in the microteaching laboratory were instructed to behave as they normally would in a school situation, with the exception of the session on disciplinary techniques. In this instance they selected at random cards from a deck which instructed them to carry out some misbehavior such as pretending to be asleep, pencil-tapping, book-dropping, talking when the teacher was talking, etc. The secondary students were also briefed on the elements of each teaching skill and received two hours of training in the use of the Flanders interaction analysis rating system.

In the peer-teaching mode, trainees who acted as secondary students were instructed to play the role to the best of their ability. They too received instruction in the skills and the Flanders system, and they also drew from the deck of misbehavior cards in the session concerned with disciplinary techniques.

Rating Procedures. During the seventh week of the eight-week student teaching block which followed the microteaching sequence, college coordinators visited student teachers and administered the "Stanford Teacher Competence Appraisal Guide." The instrument was administered to one class for each student teacher.

Orientation of coordinators was carried out prior to the initial data gathering. They were told to choose the class which the student teacher had been exposed to the longest, since the students in that class would be in the best position to evaluate the student teacher's performance. They were instructed to read each item of the "Guide" to the class, including the explanations, and to answer any questions of interpretation to the best of their ability.

Testing the hypotheses. A "one-tailed" research hypothesis $(H_R: \mu_E > \mu_C)$ was used to test for differences on items 9 and 11 of the "Appraisal Guide" ("pupil participation and attention" and "teacher-pupil rapport") because direction was predicted on these two items. A "two-tailed" hypothesis $(H_R: \mu_E \neq \mu_C)$ was used to test for differences on the remaining eleven items, since direction was not predicted on these items. The research hypothesis was to be considered supported if $\alpha < .05$.

RESULTS

Mean ratings on each of the "Appraisal Guide"items are shown in Table I. None of the differences between means were significant. It should also be noted that, while no significant differences existed, differences between sample means in fact favored the control group on twelve of the thirteen variables.

TABLE II - "Stanford Teacher Competence Appraisal Guide"
Ratings of Student Teachers in the Experimental and Control Groups

VARIABLE	EXPERIMENTAL GROUP (n=1154)* MEAN	EXPERIMENTAL GROUP (n=1154)* STANDARD DEVIATION	CONTROL GROUP (n=1152)* MEAN	CONTROL GROUP (n=1152)* STANDARD DEVIATION
1. Clarity of Aims	4.31369	1.28920	4.40799	1.24780
2. Appropriateness of Aims	4.34142	1.31619	4.47309	1.34529
3. Organization of the Lesson	4.56672	1.40293	4.67795	1.33048
4. Selection of Content	4.51040	1.37578	4.60503	1.31926
5. Selection of Materials	4.48613	1.43437	4.64323	1.34953
6. Beginning the Lesson	3.97920	1.55925	4.06684	1.55964
7. Clarity of Aims	4.60139	1.47973	4.62413	1.44529
8. Pacing the Lesson	4.39601	1.54603	4.41319	1.42440
9. Pupil Participation and Attention	4.10919	1.64136	4.21962	1.56680
10. Ending the Lesson	4.27903	1.39946	4.32639	1.42193
11. Teacher-Pupil Rapport	4.92201	1.74647	4.84115	1.72320
12. Variety of Evaluative Procedures	4.47747	1.41721	4.51563	1.38118
13. Use of Evaluation to Improve Teaching and Learning	4.49827	1.48784	4.54427	1.45050

* Refers to the number of high school students who rated the student teachers in this group.

CONCLUSIONS

There were no apparent differences between control group trainees and experimental group trainees as reported on the rating instrument by the high school students enrolled in the classes where the trainees were student teaching. If any differences did exist, the rating system was not sufficiently sensitive to detect them.

Accounting for results of this type involves speculation. Assuming, however, that these results are valid and that the rating system used was adequate, several hypotheses are suggested below which might have contributed to these results:

1. The behavioral responses during microteaching of the peer students may not have varied sharply from that of the secondary students. The peer trainees were aware of the fact that they were to simulate secondary student behavior to the best of their ability. It could be that they were simply very successful at this.

2. Most of the trainees were from the same geographical area as the high school students and probably did not differ markedly from them in cultural background. In other words, the college-level trainees were culturally very similar to the high school students with whom they worked in the microteaching laboratory and subsequently in student teaching; hence the "shock" of being confronted by the high school students was not as great as anticipated.

3. Peer-teaching groups appeared to take an "all-for-one, one-for-all" attitude in which they complimented one another frequently for the better aspects of their performances. High school students appeared less enthusiastic in their praise. These phenomena may have contributed to the success of the peer-teaching mode.

4. It seems possible that trainees place a higher value on evaluative feedback from their own peer-group than on feedback from the secondary student group. Each member of the peer group had to "prove himself" by the same set of criteria; hence he was not subject to evaluation by anyone who was not subject to evaluation by him.

RECOMMENDATIONS

In terms of educational practice, it would appear that the use of the less expensive and more easily scheduled peer-teaching mode is certainly a viable alternative to the type of microteaching in which trainees teach secondary school students. This generalization should be limited, however, to situations similar to the one described in this report in which the secondary school students come from a cultural background similar to that of the teacher-trainees.

In terms of further research, it would be of considerable interest to test the same hypotheses in a situation in which the secondary school students come from a markedly different background than the teacher trainees. For example, middle-class teacher trainees who intend to student teach in an inner-city school could work with inner-city youngsters in the microteaching laboratory before they student teach. Their success could be compared with that of a comparable group who use the peer-teaching mode. This kind of situation would be more consonant with the rationale presented previously which predicted differences in teaching success because of differences in the kinds of response patterns encountered in the microteaching laboratory. It would seem a resonable assumption that a considerable difference would exist between the response patterns of the inner-city children and those of middle-class peer trainees.

APPENDIX A

STANFORD TEACHER COMPETENCE APPRAISAL GUIDE

		0 Unable to Observe	1 Weak	2 Below Average	3 Average	4 Strong	5 Superior	6 Outstanding	7 Truly Exceptional
1. Clarity of Aims.	The purposes of the lesson are clear.	0	1	2	3	4	5	6	7
2. Appropriateness of Aims.	The aims are neither too easy nor too difficult for the pupils. They are appropriate, and are accepted by the pupils.	0	1	2	3	4	5	6	7
3. Organization of the Lesson.	The individual parts of the lesson are clearly related to each other in an appropriate way. The total organization facilitates what is to be learned.	0	1	2	3	4	5	6	7
4. Selection of Content.	The content is appropriate for the aims of the lesson, the level of the class and the teaching method.	0	1	2	3	4	5	6	7
5. Selection of Materials.	The specific instructional materials and human resources used are clearly related to the content of the lesson and complement the selected method of instruction.	0	1	2	3	4	5	6	7
6. Beginning the Lesson.	Pupils come quickly to attention. They direct themselves to the tasks to be accomplished.	0	1	2	3	4	5	6	7
7. Clarity of Presentation.	The content of the lesson is presented so that it is understandable to the pupils. Different points of view and specific illustrations are used when appropriate.	0	1	2	3	4	5	6	7

(Continued on next page)

APPENDIX A (cont.)

STANFORD TEACHER COMPETENCE APPRAISAL GUIDE

			Unable to Observe	Weak	Below Average	Average	Strong	Superior	Outstanding	Truly Exceptional
8.	Pacing the Lesson.	The movement from one part of the lesson to the next is governed by the pupils' achievement. The teacher "stays with the class" and adjusts the tempo accordingly.	0	1	2	3	4	5	6	7
9.	Pupil Participation and Attention.	The class is attentive. When appropriate the pupils actively participate in the lesson.	0	1	2	3	4	5	6	7
10.	Ending the Lesson.	The lesson is ended when the pupils have achieved the aims of instruction. There is a deliberate attempt to tie together the planned and chance events of the lesson and relate them to the immediate and long range aims of instruction.	0	1	2	3	4	5	6	7
11.	Teacher-Pupil Rapport.	The personal relationships between pupils and the teacher are harmonious.	0	1	2	3	4	5	6	7
12.	Variety of Evaluative Procedures.	The teacher devises and uses an adequate variety of procedures, both formal and informal, to evaluate progress in all of the aims of instruction.	0	1	2	3	4	5	6	7
13.	Use of Evaluation to Improve Teaching and Learning.	The results of evaluation are carefully reviewed by teacher and pupils for the purpose of improving teaching and learning.	0	1	2	3	4	5	6	7

APPENDIX B - Skills Rating Sheets

Name of person microteaching:_____

Your name:_____

SET INDUCTION

	Not Very	Average	Extremely
How interesting was this teacher's introduction?			
To what extent did the introduction inspire you to study the main part of the lesson?			
Would the teacher's introduction be likely to help you remember the material covered in the main part of the lesson?			
How clear was the relationship between the introduction and the main part of the lesson?			

General Evaluation	Needs Work	Good	Excellent
Appearance			
Eye Contact			
Voice			
Grammar			

APPENDIX B (cont.) - Skills Rating Sheets

Name of person microteaching:_____

Your name:_____

QUESTIONING

	Needs Work	Good	Outstanding
Fluency. The teacher asks a large number of questions.			
Probing. The teacher probes for higher-order responses.			
Reinforcement. The teacher uses a variety of reinforcers.			
Difficulty level. Questions are not too easy or too difficult.			
Waiting for response. The teacher doesn't answer his own questions.			

General Skills	Needs Work	Good	Outstanding
Appearance			
Eye Contact			
Voice			
Grammar			
Poise			

APPENDIX B (cont.) - Skills Rating Sheets

Name of person microteaching:_____

Your name:_____

ILLUSTRATING

	Needs Work	Good	Outstanding
Relevancy. The teacher used examples or demonstrations which were relevant to my experience and interesting to me.			
Relationship. The teacher directly related (or asked the students to relate) the examples to the main idea of the lesson.			
Class Examples. The teacher checked to see if the class understood the main idea of the lesson by asking the students to give examples illustrating the point.			
Difficulty. If necessary, the teacher started with simple examples and followed with more complex examples in order to illustrate an idea.			
Understanding. The examples and/or demonstrations helped me to understand the main idea.			

General Skills	Needs Work	Good	Outstanding
Appearance			
Eye Contact			
Voice			
Grammar			
Poise			
Reinforcement			

APPENDIX B (cont.) - Skills Rating Sheets

Name of person microteaching:_____

Your Name:_____

VARIATION OF STIMULUS SITUATION

	Needs Work	Good	Outstanding
Teacher Movements. At various times during the lesson, the teacher was noted in the left, right, forward, and back of the training space.			
Teacher Gestures. The teacher used gestures (hand, body, and head) to help convey extra meaning in the presentation of the lesson.			
Focusing. When the teacher wanted to emphasize a point, it was clearly stressed through the use of gestures (e.g. pointing, banging on the board, etc.) or through the use of verbal expressions (e.g. "Listen closely," "Watch this," etc.) or by combining both gestural and verbal acts.			
Interactions. The teacher varied the kind of participation required of the students. That is, students could be directly called on, group questions were asked, student-student interchange could occur, students could role-play, go to the board, etc. The teacher is to mix these various techniques.			
Pausing. The teacher gave the students time to think or get ready for new ideas by using silence. That is, all teacher activity ceases for short time periods.			
Oral-Visual Switching. The teacher uses visual material (words on blackboard, objects pictures, etc.) in such a way that the student must look to get information. That is, the teacher doesn't say what the object or word is but refers to it in the lesson, making the student look not listen to what is going on.			

APPENDIX B (cont.) Skills Rating Sheets

SUMMARY OF CATEGORIES FOR INTERACTION ANALYSIS

TEACHER TALK	INDIRECT INFLUENCE	1. ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a non-threatening manner. Feelings may be positive or negative. Predicting and recalling feelings are included.
		2. PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, not at the expense of another individual, nodding head or saying "uh-huh" or "go on" are included.
		3. ACCEPTS OR USES IDEAS OF STUDENT: Clarifying, building, or developing ideas or suggestions by a student. As teacher brings more of his own ideas into plan, shift to category 5.
		4. ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.
	DIRECT INFLUENCE	5. LECTURES: giving facts or opinions about content or procedure; expressing his own ideas; asking rhetorical questions.
		6. GIVES DIRECTIONS: direction, commands or orders with which a student is expected to comply.
		7. CRITICIZES OR JUSTIFIES AUTHORITY: Statements intended to change student behavior from non-acceptable to acceptable patterns; bawling someone out; stating why the teacher is doing what he is doing, extreme self-reference.
STUDENT TALK		8. STUDENT TALK RESPONSE: talk by students in response to teacher. Teacher initiates the contact or solicits student statement.
		9. STUDENT TALK INITIATION: talk by students, which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.
		10. SILENCE OR CONFUSION: pauses, short periods of silence, and periods of confusion in which communication cannot be understood by observer.

APPENDIX B (cont.) - Skills Rating Sheets

Interaction Analysis Matrix

		1	2	3	4	5	6	7	8	9	10	Total
Accepts feeling	1											
Praises or encourages	2											
Accepts or uses student's ideas	3											
Asks questions	4											
Lectures	5											
Gives directions	6											
Criticizes or justifies authority	7											
Student talk response	8											
Student talk initiation	9											
Silence or confusion	10											
TOTAL												

APPENDIX C - Syllabus for Secondary Methods Course (Education 485)

General Statement. This course meets a certification requirement for secondary school teachers and is designed to complement the special subject area teaching methods course (Education 480) which is required in a student's major field of teacher preparation.

It would be advantagious to the student that he should take first his Psychology requirement followed by Education 480, and Education 485 in sequence. Education 460 and Education 465 may be taken either prior to or following student teaching. Student teaching should closely follow Education 485 so that the greatest possible good may be derived by the student from the totality of these courses. Since Education 485 is most directly related to the real teaching situation; it should be taken immediately prior to student teaching.

Teaching Objectives. This course is designed to assist prospective teachers with the development of some teaching skills utilizing various teaching techniques. This will be approached through video taping of students assuming the role of a teacher.

Teaching skills include:

1. Such skills as reinforcement of pupil-participatory responses, varying the stimulus, silence and non-verbal cues, set induction, use of audio-visual materials, questioning procedures, use of illustrations and examples, and classroom management and control.

2. The students should analyze the traits and qualities of good teachers so that they may borrow from the best of these in developing their own style of teaching.

3. The students should also be made aware of various instructional systems. The changing role of the teacher should be studied within the context of the new instructional systems such as team teaching, differentiated staffing, resource centers, programmed instruction, computer-assisted instruction, modular instructional units, and flexible scheduling.

4. The student should receive limited instruction in basic audio-visual machines and materials of a general nature.

5. The students should receive limited instruction in preparation of teaching materials via the fluid duplicator and other office related machines and equipment.

6. The students should receive background for development of skills of classroom control and discipline.

7. The students should develop basic knowledge and skills in measurement and evaluation of pupil growth and development. Stress should be placed on evaluation of pupil learning in terms of performance criteria.

8. The students should receive information on individualization of of instruction as well as small group and large group instruction.

9. The students should be aided in establishing the relationship of motivation to the selection of materials and techniques of instruction which may be emphasized.

Learner Objectives. When the student finishes Education 485 he should be able to perform the following operations with basic professional competence:

1. Questioning skills, including fluency in asking questions, probing questions, higher order questions, and divergent questions.

2. Skills designed to increase student participation, including reinforcement, recognition of attending behavior, use of silence and non-verbal cues, and verbal cuing.

3. Skills designed to increase student involvement, including set induction and stimulus variation.

4. Presentation skills, including lecturing, use of illustrations and examples, planned repetition, use of overhead projector and 16-mm film projector.

5. Response skills, including verbal and non-verbal responses to student behavior.

6. Evaluative skills, including interpretation of test results and combining of grades.

7. Professional "outreach" skills, including the ability to use classroom interaction analysis techniques and to discuss knowledgeably newer instructional systems such as programmed instruction, computer-assisted instruction, flexible scheduling, and modular instructional units.

8. Materials preparation skills including at least minimal knowledge of and skill in handling basic office machines such as the fluid duplicator, Thermo-Fax (copying machine), mimeograph, etc.

Texts. Glenys G. Unruh and William M. Alexander, Innovations in Secondary Education: Holt, Rinehart and Winston, Inc., Chicago, 1970.

Leonard M. Douglas, The Secondary Teacher at Work: D. C. Heath and Company, Boston, 1967.

Appropriate Films.

Set Induction
Fluency in Asking Questions
Divergent Questions
Probing Questions
The Quiet Revolution
Flexible Scheduling (Allen)
Differentiated Teaching Staff (Allen)
The Resource Center (Allen)
The Remarkable Schoolhouse
The Performance Curriculum (Allen)